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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,855	07/21/2003	Stephen R. Foltyn	S-100,564	6546
35068	7590	05/26/2005	EXAMINER	
UNIVERSITY OF CALIFORNIA LOS ALAMOS NATIONAL LABORATORY P.O. BOX 1663, MS A187 LOS ALAMOS, NM 87545			COOKE, COLLEEN P	
			ART UNJT	PAPER NUMBER
			1754	

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/624,855	FOLTYN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Colleen P. Cooke	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 18 December 2003.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.  
 4a) Of the above claim(s) 1-13 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 14-20 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) 1-20 are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____.   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

*Election/Restrictions*

This application contains claims directed to the following patentably distinct species of the claimed invention:

Species A: Claims 1-5, drawn to a base with a layer of  $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_s$  upon the base.

Species B: Claims 6-13, drawn to a metal base with a layer of MgO upon the base and a layer of  $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_s$  upon the MgO.

Species C: Claims 14-20, drawn to a metal base including one or more intermediate layers, a layer of MgO upon the one or more intermediate layers, a layer of  $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_s$  upon the MgO, and a layer of HTS upon the  $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_s$ .

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Bruce Cottrell on 5/15/05 a provisional election was made with traverse to prosecute the invention of Species C, claims 14-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 recites the limitation "said layer of a mixture of strontium titanate and strontium ruthenate" in line 2. There is insufficient antecedent basis for this limitation in the claim. The limitation is clearly intended to refer back to the buffer layer of SrTi<sub>x</sub>Ru<sub>1-x</sub>O<sub>s</sub> in claim 14; however, claim 14 does not refer to this layer as a "mixture of strontium titanate and strontium ruthenate" and further as the claim allows for x to be 1, the layer of claim 14 can be strontium titanate and is not limited to being a mixture as described in claim 16.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 14, 15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller et al. (6410487).

Miller et al. teaches (see Figure 3) a superconductor including a metal substrate, a first ceramic layer which may be MgO (see Column 4, lines 46-50 and Column 5, lines 14-18), a second ceramic layer which may be strontium titanate (STO), and a superconductor layer which may be YBCO (Column 3, lines 2-3).

Claims 14, 15, 18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Holesinger et al. (6716545).

The applied reference has a common assignee and 3 common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Holesinger et al. teaches a substrate, one or more intermediate layers, and a superconducting layer (generally in Column 2, lines 7-10). Holesinger et al. teaches specifically that the superconductor is generally YBCO (Column 3, lines 6-7), the substrate can be metal (Column 3, lines 17-19), that there is an IBAD MgO layer on the substrate (Column 3, lines 51-54), and that one or more layers may be deposited on the MgO layer including strontium titanate (Column 4, lines 30-31 and 45-48). Holesinger et al. further teaches in example 4 the specific combination of a Ni alloy substrate, IBAD-MgO layer, copper-doped strontium titanate layer deposited at 775°C (which is “about 800°C”), and YBCO layer (Example 4, Column 7, lines 20-40).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14-16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being obvious over Jia et al. (6756139) in view of Bruchhaus (WO 03/021656).

The applied reference has a common a common assignee and 3 common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Jia et al. teaches a Ni-alloy substrate, an IBAD-MgO layer, a strontium ruthenate (SRO) layer, and a YBCO layer (see Figure 1). Although Jia et al. teaches that the SRO layer has many properties and characteristics ideal to this architecture, Jia et al. does not teach that the layer may be  $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_s$ .

Bruchhaus teaches that when using SRO in ferroelectric applications, problems arise including formation of undesirable compounds, such as  $\text{RuO}_2$ ,  $\text{SrO}$ , and  $\text{SrCO}_3$ , upon exposure to

the atmosphere and annealing and that undesirable properties may result (page 2, line 15 through page 3, line 8). Bruchhaus therefore substitutes SRO enriched with TiO<sub>2</sub> in place of SRO to avoid the problems discussed (page 3, lines 15-21).

It would have been obvious to modify the superconductor architecture of Jia et al. by enriching the SRO layer with some TiO<sub>2</sub> because Bruchhaus teaches some problems are associated with SRO in similar processing and applications and that the addition of TiO<sub>2</sub> alleviates these problems.

Claims 14-17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being obvious over Jia et al. (6800591) in view of Bruchhaus (WO 03/021656).

The applied reference has a common assignee and 3 common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might

also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Jia et al. teaches a Ni-alloy substrate, an IBAD-MgO layer, a strontium ruthenate (SRO) layer, and a YBCO layer (see Figure 1). Jia et al. further teaches that an additional buffer layer, which may be CeO<sub>2</sub> may be used between the SRO and YBCO layers (Column 4, lines 33-40) Although Jia et al. teaches that the SRO layer has many properties and characteristics ideal to this architecture, Jia et al. does not teach that the layer may be SrTi<sub>x</sub>Ru<sub>1-x</sub>O<sub>s</sub>.

Bruchhaus teaches that when using SRO in ferroelectric applications, problems arise including formation of undesirable compounds, such as RuO<sub>2</sub>, SrO, and SrCO<sub>3</sub>, upon exposure to the atmosphere and annealing and that undesirable properties may result (page 2, line 15 through page 3, line 8). Bruchhaus therefore substitutes SRO enriched with TiO<sub>2</sub> in place of SRO to avoid the problems discussed (page 3, lines 15-21).

It would have been obvious to modify the superconductor architecture of Jia et al. by enriching the SRO layer with some TiO<sub>2</sub> because Bruchhaus teaches some problems are associated with SRO in similar processing and applications and that the addition of TiO<sub>2</sub> alleviates these problems.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colleen P Cooke whose telephone number is 571-272-1170. She can normally be reached Mon.-Thurs. 8am-6:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, her supervisor, Stan Silverman can be reached at 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Colleen P. Cooke 5/24/05*  
Colleen P Cooke  
Primary Examiner  
Art Unit 1754